MISSOURI DEPARTMENT OF NATURAL RESOURCES

Division of Geology and Land Survey

MISSION

To protect the quality of Missouri's water, mineral, land and energy resources; provide guidance in the development and use of Missouri's natural resources; restore and preserve all of the private and public land boundaries of Missouri; and protect people, livestock, wildlife and property from unsafe dams.

To accomplish its broad mission, the Division of Geology and Land Survey has four technical subdivisions that include the Geological Survey Program, Water Resources Program, Land Survey Program and Dam and Reservoir Safety Program. These four programs are supported by an administrative team that provides management oversight and other services under the direction of the state geologist who serves as division director.

The division director is responsible for seeing that all statutory obligations are met, provides direction for the division, serves as administrator for the Missouri State Oil and Gas Council, and serves as a member of the Land Reclamation Commission and the Well Installation Board.

GEOLOGICAL SURVEY PROGRAM

The Geological Survey Program is the oldest program within the Division of Geology and Land Survey. This program does geologic mapping that provides basic data on the composition, thickness and distribution of bedrock and surficial materials. Geologic maps are important for evaluating waste disposal projects, analyzing groundwater problems and determining geologic hazards because geology makes a difference.

The environmental geology section conducts geologic and hydrologic

The stratigraphy, or layers, of bedrock formations and soil deposits provide valuable information for geologists and hydrologists.

McCracken Core Library

The Geological Survey Program manages the McCracken Core Library, which is a repository of more than 2.5 million lineal feet of mineral exploration rock cores donated by mining companies that have conducted coring programs in the state. Core studies provide information useful in the placement of dams, reservoirs, hazardous waste facilities, waste-water treatment facilities, highways and other surface structures. Laboratory facilities are available for people who use the library.

field investigations and provides technical assistance to the public and government agencies. Staff duties include water tracing, soil testing, soil gas analysis, shallow drilling and geophysical exploration. Such technologies are important in solving problems related to waste disposal and spills of hazardous materials.

Earthquake research and the preparation of earthquake hazard maps are important activities of the Geological Survey Program. The information provided by this work helps to protect private homes, public buildings, roads, bridges and other essential facilities from potential hazards such as landslides, subsidence and liquefaction. The program also develops information on other types of geologic hazards not associated with earthquakes.

Pollution prevention and protection of groundwater quality is a high priority with the program's Wellhead Protection Section. They regulate well drillers and pump installers to ensure that all private water wells, monitoring wells and heat pump wells in Missouri are properly installed to protect groundwater. Regulatory authority is provided by the Water Well Driller's Act and the Well Installation Board. Ensuring that abandoned wells are properly plugged is also a major responsibility of this section.

The program also has an underground injection control unit that protects groundwater resources from the improper injection of fluids into the subsurface. Regulatory authority is provided by the Oil and Gas Act through the Oil and Gas Council.

A land surveyor uses the Global Positioning Satellite System, which employs satellites to determine the equipment's position.

LAND SURVEY PROGRAM

The Land Survey Program preserves and perpetuates the U.S. Public Land Survey System in Missouri, responds to requests for land survey information, establishes uniform survey standards, and horizontal and vertical survey control monuments to enable the use of the State Coordinate System.

Through contracting, the Land Survey Program works with private surveyors and county commissions in the effort to define, mark and maintain all land corners in the U.S. Public Land System.

HARN Survey Network

The Land Survey Program, in cooperation with the National Geodetic Survey, has completed the establishment of a High Accuracy Reference Network (HARN) system for Missouri. These monuments provide a highly accurate grid of latitudes, longitudes and elevations that support mapping, charting, boundary determinations, resource evaluations and scientific applications. The accuracy of each station is 1 part in 1 million to 1 part in 10 million. The monuments were established with Global Positioning Satellite (GPS) technology.

The General Land Office corners are important because they are the basis for the location of all private property in Missouri. Land use and development have destroyed many of the original boundary markers set by Missouri's first surveyors. Relocating, restoring, and preserving these boundaries is a major task of the Land Survey Program.

The Land Survey Program also investigates boundary surveys and corners that conflict. The location of a government corner affects all of the property in a section or quarter section of land because all survey monuments are part of a grid system.

Document storage and retrieval facilities maintained by the Land Survey Program house nearly 2 million indexed county land survey records, which are available for use by the general public.

DAM AND RESERVOIR SAFETY PROGRAM

There are thousands of dams in Missouri that impound water for various uses and most are privately owned. The Dam and Reservoir Safety Program regulates the construction of all non-federal, non-agricultural dams in Missouri that are 35 feet or more in height, and monitors maintenance on more than 600 existing dams. Regulatory authority is provided by the Missouri Dam and Reservoir Safety Law through the Dam and Reservoir Safety Council.

Not all dams impound water. Some impound mine tailings, which could be environmentally hazardous and pose a threat to human safety in the event of a dam failure. Program staff inspect dams to determine if they have observable defects that could cause threats to life or property.

Dam failures were once frequent in the state before the establishment of the Dam and Reservoir Safety Program. Rules, regulations and guidelines prescribed by the Council and the program ensure that all permitted and new dams meet minimum safety standards, and that the upgrading and operation of existing dams and reservoirs provide adequate protection for public safety and property.

Unsafe dams, whether they hold impoundments of water or other substances, can be life threatening to people, livestock and wildlife downstream.

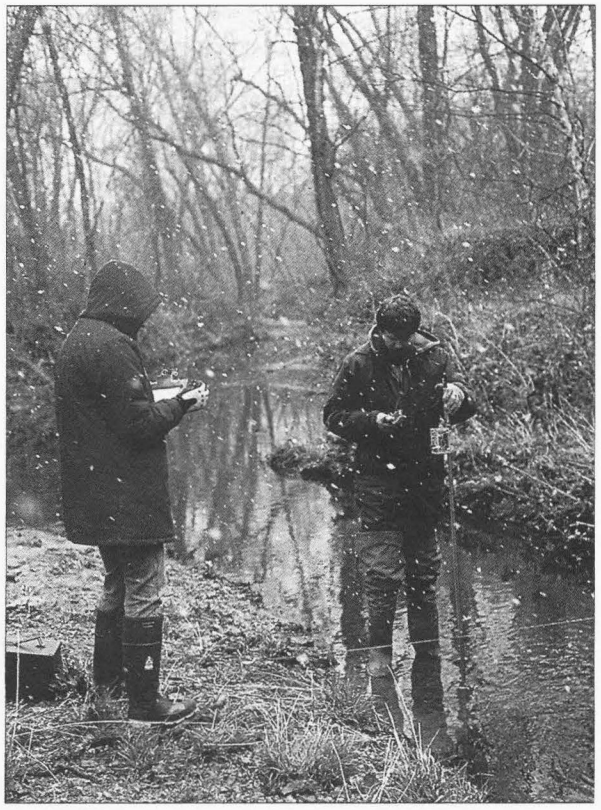
State Water Plan

It is a statutory responsibility of the Water Resources Program to develop a comprehensive state water plan that provides basic scientific and background information on the water resources of the state, as well as to identify water use problems and opportunities throughout Missouri. The program has prepared a seven-volume series of technical publications that focus on surface water resources, groundwater resources, water quality, water use, flood and drought, interstate rivers and water policy, and Missouri water law. Another series of technical publications in preparation will identify water issues and opportunities by region.

WATER RESOURCES PROGRAM

The Water Resources Program has a number of functions that include state water planning, groundwater geology and hydrology, surface water hydrology, wetland conservation, river basin planning and policy, and major water users data management.

Determining the availability of groundwater, protecting groundwater quality, defining aquifers, monitoring groundwater levels through the use of observation wells, and responding to public inquiries concerning groundwater quality, spring systems, caves and water problems associated with karst areas are duties of the Water Resources Program.



Geologists and hydrologists working for the division regularly conduct groundwater and surface water studies.

Providing information relative to flooding and drought, surface water supply, water use trends, and giving technical assistance to lessen the impacts of erosion and sediment deposition are also responsibilities of this program.

In addition, the Water Resources Program participates in interstate water policy making, and works with interstate river basin associations to coordinate major river issues that effect Missouri. The program evaluates and provides information on wetland resources, and implements the state wetland conservation plan. Satellite technology and aerial photography are used to monitor changes in Missouri wetlands.

ADMINISTRATION, GIS AND INFORMATION SERVICES

The Division of Geology and Land Survey, through its Geographic Information System personnel, public information, document editing and graphics staff, and Maps and Publications Service Center, provides important natural resource and environmental information to the general public, academic institutions and government agencies. A free list of maps and publications is available. Maps and publications may be purchased over-the-counter or by mail, phone or fax.

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P.O. Box 250, Rolla, MO 65402-0250.
For general information, call (573) 368-2100.
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